AUTOMATIC REFRIGERATION

AUTOMATIC REFRIGERATION

for

Apartment Houses, Hotels, Clubs, Industrial Cafeterias, Colleges, Schools, Institutions, Department Stores, Restaurants, Drinking Water Systems.

Trade Mark Registered
U. S. Pat. Office

THE AUTOMATIC REFRIGERATING CO.
INCORPORATED
HARTFORD CONNECTICUT.

AUTOMATIC REFRIGERATION

A FACT — THERE IS BUT ONE AUTOMATIC

A Partial List of Installations

Apartment Houses

Ponce de Leon Apts.,
Atlanta, Ga.

Astor Court Apts.,
New York City.

Mosier Apartments,
Buffalo, N. Y.

J. E. Ransford,
Los Angeles, Cal.

Savoy Apartments,
Houston, Texas.

Callan Court Apts.,
Atlanta, Ga.

Department Stores

Jenss Bros.,
Niagara Falls, N. Y.

The G. M. McKelvey Co.,
Youngstown, Ohio.

Z. L. White,
Columbus, Ohio.

Brown-Thomson & Co.,
Hartford, Conn.

Wall Co.,
Long Beach, Cal.

G. Fox & Co.,
Hartford, Conn.

J. L. Coker & Co.,
Hartsville, S. C.

J. W. Hale & Co.,
So. Manchester, Conn.

Club Houses

Hartford Club,
Hartford, Conn.

The Pendennis Club,
Louisville, Ky.

Y. W. C. A.,
Hartford, Conn.

Central Club for Nurses,
New York City.

Rochester Club,
Rochester, N. Y.

The Rainier Club,
Seattle, Wash.

Camden Mfgs. Club,
Camden, N. J.

Saddle & Cycle Club,
Chicago, Ill.

Everglades Club,
Palm Beach, Fla.

Hotels

Hotel Blodgett,
Marshfield, Wis.

Hotel Wentworth,
New Castle,
Portsmouth, N. H.

Hotel Roanoke,
Roanoke, Va.

Kew Gardens Inn,
Kew Gardens, L. I.

Aragon Hotel,
Jacksonville, Fla.

White House Hotel,
Gainesville, Fla.

Whitcomb Hotel,
San Francisco, Cal.

Westport Inn,
Westport, N. Y.

U. S. Grant Hotel,
San Diego, Cal.

Sheraton Hotel,
High Point, N. C.

Hotel Belmar,
Mazatlan, Mexico.

Tampa Bay Hotel,
Tampa, Fla.

Woodstock Inn.
Woodstock, Vt.

Copley Square Hotel,
Boston, Mass.

Chatham Bars Inn,
Chatham, Mass.

Hotel Majestic,
Lake Charles, La.

Colleges

University of Kentucky,
Lexington, Ky.

Catholic Univ. of America,
Washington, D. C.

Holy Cross College,
Worcester, Mass.

Wellesley College,
Wellesley, Mass.

Florida State College for Women,
Tallahassee, Fla.

Fordham University,
New York City.

University of W. Va.,
Morgantown, W. Va.

Industrial Cafeterias

National Cash Register Co.,
Dayton, O.

Metropolitan Life Ins. Co.,
New York, N. Y.

Chase Metal Works,
Waterbury, Conn.

Goodyear Tire & Rubber Co.,
Akron, O.

Mutual Life Insurance Co.,
New York, N. Y.

Chase National Bank Club,
Trinity Place,
New York City.

Crouse-Hinds Co.,
Syracuse, N. Y.

Restaurants

Manhattan Restaurants,
Rochester, N. Y.

Britling Cafeteria,
Louisville Ky.

Chin Lee,
Providence, R. I.
New York City.

Leighton Cafeteria,
Oakland, Cal.,
San Francisco, Cal.

Where Several Automatic Plants are Installed

Childs Co.,
Fred Harvey,
Bowles Lunch,
C. & L. Lunch Co.,
Schraffts,
Pig'n Whistle.

Main Office and Works - Hartford, Connecticut

Branch Sales and Service Offices:

Atlanta, Ga.
Boston, Mass.
Chicago, Ill.
Cincinnati, Ohio
Denver, Colo.
Honolulu, T. H.
Huntington, W. Va.
Jacksonville, Fla.
Los Angeles, Cal.
New Haven, Conn.
New Orleans, La.
New York City
Philadelphia, Pa.
Rochester, N. Y.
San Francisco, Cal.
Seattle, Wash.
Washington, D. C.

Direct Representation:

Baltimore, Md. Houston, Texas.

NOTE: The Automatic System of Refrigeration is fully protected by our patents

"What Will Automatic Refrigeration Do *for* Us?"

That's the question that everyone to whom we sell the *Automatic* asks the salesman some time during their conversation. And it's a question that should be asked. Everyone can see how, where and why the *Automatic* saves considerable money as compared with any other form of refrigeration. But in the case of the hotel, cafeteria or restaurant, the sales element, the possibilities of the *Automatic* as a means of making more satisfied customers, the fact that it secures new trade and holds old patrons, should be taken into consideration. Likewise, with the club, school, college and apartment house, *Automatic Refrigeration* adds greatly to the convenience of keeping things fresh without the use of ice.

Recognition of the manifest advantages of the *Automatic*—added cleanliness, absolute reliability, safe operation, complete *Automatic* control, adaptability to all refrigerating requirements—is indicated by the partial list of satisfied customers shown on the opposite page. The fact that the *Automatic*—manufactured by The Automatic Refrigerating Company of Hartford—is the only genuinely automatic refrigerating system is another reason why so many are being installed each year.

Elks' Club, Baltimore, Md.

Architects: Wyatt & Nolting, Baltimore, Md.

Consulting Engineer: James Posey

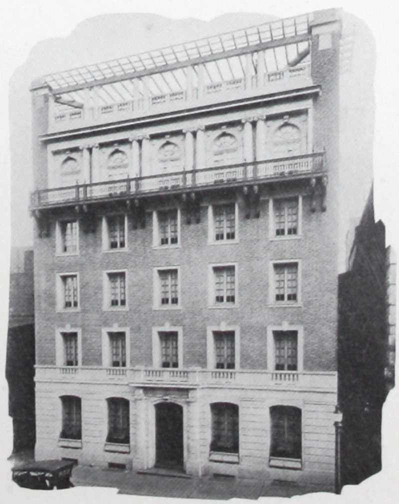
Automatic Refrigeration supplied to:

300 Gallon *Drinking Water System* (40°)

Kitchen Box
8′ 8″x 5′x 8′ 9″ (36° F.)

General Refrigerator
6′ 6″x 4′x 11′ (36°)

Serving Room Refrigerator
5′x 2′ 2″x 11′ (38°)



Automatics Provide Any Desired Temperature

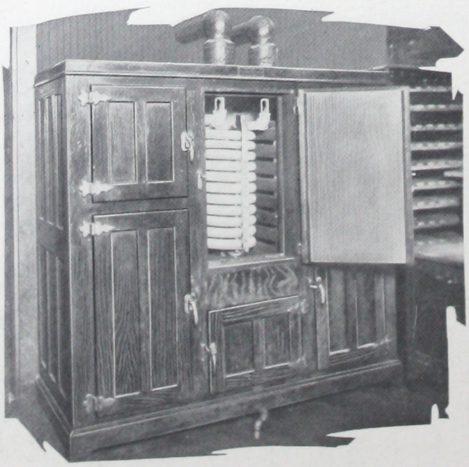
From every viewpoint the *Automatic* furnishes the ideal solution for refrigeration wherever food is served. Just consider the different degrees of refrigeration required for different purposes. Meat, to keep well, requires a temperature of about 34° F; fish, game and poultry keep best at approximately 29° F, while fruit for the table and drinking water should be held at about 40° F. Imagine trying to do this with ice—and yet it is perfectly simple with the *Automatic*. In fact, at the same time that a temperature of 40° is being maintained in the fruit and vegetables boxes, the same *Automatic* machine is often holding ice cream at 15° or making ice at a temperature of 12° or 15° F.

Automatic is Handy Refrigeration

Another advantage of *Automatic Refrigeration* is the added cleanliness it affords by eliminating the slow and sloppy proposition of icing the refrigerators. Automatically cooled refrigerators can be placed in the most convenient places, thereby speeding up the service and saving many useless steps.

In the hotel, restaurant or cafeteria, a chef's or service refrigerator containing cut pieces for special orders such as small steaks, chops, etc., is always necessary. Here an automatically cooled box, well insulated and piped, can be installed handy to the ranges.

The heat of the kitchen is often excessive, but *Automatic Refrigeration* enables the cooling of the service box to temperatures that were never



An Automatically Cooled Refrigerator

Showing the compact frost-covered pipe coils. The dry cold of the Automatic Refrigerating system preserves food indefinitely.

possible to secure with ice. Naturally this results in an excellent condition of cut pieces which the chef places on his ranges and invariably brings favorable comments from the one served.

A Powerful Advertising Force

The ripening of steaks is a feat that can only be well accomplished by the use of mechanical refrigeration. We have often heard it said of restaurants equipped with *Automatic Refrigeration* that "the very best steak in the city can be had at————". The secret of this good steak is the fact that it is cut and placed under constant and cool temperatures until it is properly ripened and therefore tender. It is such advantages of *Automatic Refrigeration* that make it a powerful advertising force for the hotel or restaurant using it. When the prospective diner knows that the foods served are at all times kept under the very best conditions, he does not hesitate in making it known to friends who very often ask "Where do we eat"?

Automatics Save Money in Many Ways

Many hotel and restaurant managers have found that a great deal of perfectly good food was being wasted because there are bound to be "left overs" every day among some of the items offered on the menu. Equipped with adequate refrigeration, these left overs can be worked up into other dishes. Ham and chicken for example can be made into croquettes. Carved trimmings from cold beef, veal and lamb can be

Pig'n Whistle, San Francisco, Cal.

Architect: Arthur S. Heineman
Los Angeles, Cal.

Meat Box	9′ x 6′ x 10′	(35°)
Cream Box	9′ x 6′ x 10′	(35°)
General Refrigerator	9′ x 6′ x 10′	(40°)
Ice Water Tank	3′ x 2½′ x 2′	(35°)
Brine Tank (3 comp.)	8′ x 16′ x 2′ (0°)	(10°) (15°)
4 Ice Cream Cabinets	2′ x 3½′ x 2′	(15°)
Soda and Water Coolers	2½′ x 2′ x 2′	(40°)
Back Bar	16′ x 2′ x 3′	(40°)
Kitchen Refrigerator	4½′ x 3½′ x 9′	(40°)
Kitchen Refrigerator	2½′ x 3½′ x 9′	(40°)
Kitchen Refrigerator	1½′ x 3′ 2″ x 9′	(40°)
Salad Counter & Cold Plate	3½′ x 7′ x 3′	(40°)
Dish Cooler	3½′ x 9′ x 3′	(40°)
Candy Maker's refrigerator	6′ x 8′ x 9′	(40°)
Ice Making Tank	200 lbs.	

turned into meat loaf. These items which have been a source of loss are made profitable and the variety on the menu is increased.

We also find that in numerous restaurants, as well as in cafeterias, a so-called cold table or counter is becoming increasingly popular. This furnishes refrigeration for the holding of salads, sauces, etc. in containers which receive their refrigeration from piping installed underneath.

It is generally understood that salads made up ready to serve, if not kept at a constant cold temperature will quickly spoil. During the day the cold table enables the keeping of the salads in perfect condition. At night, any that have not been sold are placed in the refrigerator ready to be used again the next day without loss.

Foodstuffs Purchased in Favorable Markets

Many restaurants and cafeterias before installing the *Automatic* plant were handicapped for storage space because practically one third of their ice cooled refrigerators had to be given over to ice. To rid them of this handicap, we have run coils close to the wall, or we have placed them in a compact bunker overhead.

Adequate storage capacity enables the restauranteur to purchase his "hotel cuts" in large quantities and, therefore, at a reduced price. It is also possible for him to frequently go into the local markets and purchase fresh killed, home grown meat at a saving. In any case the average restaurant manager finds it more economical to buy in quantities whenever the market quotations are favorable. The *Automatically*

Cadillac Restaurant, New York City

Architects:
B. H. & C. N. Whinston, New York City

Automatic Refrigeration supplied to:

General Storage Refrigerator 10′6″ x 12′6″ x 10′
Kitchen Box 5′ x 2′6″ x 7′
Kitchen Box 8′ x 2′6″ x 3′
Milk Box 2′ x 2′6″ x 3′
Ice Cream Box 2′6″ x 2′6″ x 3′
Service Box 3′11″ x 3′8″ x 6′
Drinking Water System

cooled refrigerator permits him to do this without fear that the food products will deteriorate before he has time to use them.

Using ice for refrigeration makes the handling of sweetbreads, brains, livers, etc. very unprofitable in summer, but these can be held in a small freezer with ease where the *Automatic* plant is installed. *Automatic Refrigeration* also permits the serving of seafoods the year round even in inland towns where such delicacies are very rare during the warm weather.

Automatic is Dry Refrigeration

Then there's the sanitary aspect—where every argument is in favor of the *Automatic*. No ice to melt and deposit the germs it carried on the walls of the refrigerator. No moisture to promote the growth of mold and bacteria and hasten the decomposition of the foodstuffs in the refrigerator. With the *Automatic* there's nothing but clean, constant cold at all times, as much or as little as may be needed, and always enough refrigeration in reserve to meet any demands.

Automatics Cool Drinking Water

The *Automatic Plant* by refrigerating an insulated tank provides an ideal way for cooling drinking water to any desired temperature for any number of fountains. This, of course, completely does away with the troublesome ice man.

If there is a demand for cracked ice in cold coffee and tea in hot weather, this likewise can be easily met when the *Automatic* is installed. The

Standard Sanitary Mfg. Co.,
Louisville, Ky.

Automatic Refrigeration supplied to:

General Refrigerator
Meat Compartment 5′ x 5′ x 7′ (35°)
Vegetable Compartment 5′ x 5′ x 7′ (40°)

Kitchen Box
6′6″ x 2′6″ x 6′0″ (40°)

Salad Tray
2′ x 4′ x 7′

Drinking Water
Cooling 500 gallons every 24 hours

same plant, while performing other refrigeration duties can also manufacture, in an ice making tank right on the premises, whatever ice is necessary for this purpose.

Automatics Cheaper than Ice

Looking at the question of refrigeration from the standpoint of comparative economy, the use of ice appears to be a sheer waste of money, considering the item of monthly cost of operation alone. If the comparative efficiencies and convenience of ice and *Automatic Refrigeration* are considered, the advantages of having *Automatic Refrigeration* are tremendous. But on the cost of operation alone—as actual records on file in our office will show—the *Automatic* will save enough over the cost of ice to pay for the plant in a very short time. Furthermore, in many instances where *Automatics* have replaced manually controlled plants, half the previous operating cost has been saved.

The following example gives a very conservative estimate of the cost of *Automatic Refrigeration* as compared with ice.

Using ice to cool a well insulated refrigerating space, a minimum temperature of 45° in hot weather can be maintained. To keep a storage box 5′ x 9′ x 8′ in the basement and a kitchen box 5′ x 3′ 6″ x 8′, a milk box 4′ x 2′ 6″ x 3′ and a restaurant box 5′ x 4′ x 8′ on the first floor at that temperature as well as cooling the drinking water supply requires 1052 pounds of ice per day or 15 tons per month. At $8.00 per ton, the average price throughout the United States, the cost of ice for the restaurant in question was about $128 for each hot month in the year.

New Southern Yacht Club
New Orleans, La.

Architect:
Mr. Rathbone DeBuys, New Orleans, La.

Automatic Refrigeration supplied to:

General Storage Refrigerator
10′ x 8′ x 10′ (36°)

(Attention is called to the advantage of the electrically driven Automatic Refrigerating Plant for isolated locations such as is shown in this illustration.)

Automatics Soon Pay for Themselves

Equivalent *Automatic Refrigeration*, operating to cool the same space, will handle more food and will materially reduce the cost of refrigeration. The *Automatic* plant will produce a much lower cold storage temperature at a cost of about $42.00 per month during the hot season, assuming electric current costs 4c. per kilowatt hour and water costs 15c. per thousand gallons—a clear saving of $86.00 per month over the cost where ice is used. Further, the uniform temperature secured, far below that possible to get with ice even though salt is used—gives *Automatic Refrigeration* a great advantage from the standpoints of both comparative cost and efficiency.

In other words, if the electric current and cooling water used during a hot July or August should amount to $42.00 the annual cost of electric power would be approximately $378. With ice, using 1052 pounds per day, at a cost of $128 during the summer months, the annual consumption will be in the neighborhood of $1152. A comparison of these figures showed a saving of $774 which in a short time would pay for the plant on a dollars and cents basis alone, taking no account of the increased convenience, the effect on trade or any of the other advantages attendant on *Automatic* mechanical refrigeration. Using ice for refrigeration is a good deal like paying rent—at the end of the year there is nothing to show for it but a pile of receipted bills.

Even in those localities where ice may be obtained at a very low price, *Automatic Refrigeration* affords a large saving. As one *Automatic* user expressed it "the first cost for ice was small" but prior to installing the

Peddie Institute, Hightstown, N. J.

Automatic Refrigeration supplied to:

General Refrigerator
(three compartments) 9′ x 19′ x 11′6″

(Meat 36° Vegetable 40°)
(Dairy 38°)

Automatic he "had difficulty in bringing the cold rooms down to the right degree", consequently he "had been obliged to constantly trim the meat and also had other losses from poor refrigeration as well as the annoyance of handling the ice".

Automatics Prevent Shrinkage

Another important feature of *Automatic Refrigeration* is the manner in which loss through shrinkage, caused by changing temperatures in the chill room, is prevented. It is a fact that meats expand and contract as the temperature changes. Experience has shown that this expansion and contraction tends to force out the moisture in the meats with the result that there is a shrinkage or loss of weight if the refrigerating system used is such that a uniform temperature cannot be maintained—in fact under any but the *Automatic* system. It is because of the perfect control *Automatic* plants have over the temperature in the various boxes, that loss from shrinkage is reduced to a negligible quantity. When it is realized that the loss of weight of meat kept in storage for any length of time under varying temperatures runs as high as 3% the importance of this item of shrinkage becomes apparent.

In this connection it must be clearly understood that any one who depends upon a non-automatic mechanical refrigerating plant is little, if any, better off than those who use ice. Whereas, the *Automatic* system is sensitive enough and quick enough in its action to prevent the warmth of the air being communicated to the contents of the re-

Astor Court Apartments,
New York City

Architect:
Mr. Charles A. Platt, New York

Consulting Engineer:
Mr. Edward N. Friedman, New York

Automatic Refrigeration supplied to:

91 *Refrigerators*

frigerator when the temperature in the chill room rises because of an open door or other causes.

No Brine Tank Hold-overs Necessary

One other advantage of *Automatic* plants over any other type of refrigeration, is the fact that there is always a vigorous circulation of air in the chill room where *Automatic* equipment is used, because the refrigerant in the cooling coils, is continually evaporating and absorbing heat from the surrounding atmosphere, even when the compressor is shut down. Where brine tanks—damp and unsanitary at best—are used for hold-overs, the room soon stagnates, once the machine is stopped, even though the brine tank is designed to hold the temperature rise within 5° in 24 hours which is not usually the case. Brine tanks seriously interfere with the free circulation of air. They also take up space that could profitably be used for storage purposes. With the *Automatic*, no brine tanks are necessary. When the temperature rises a degree or two, the *Automatic* features insure the operation of the compressor and the absolute maintenance of whatever temperature is wanted without any attention from the owner or employee.

Safe Automatic Operation Paramount Feature

Too much emphasis cannot be laid on the claim that there is but one *Automatic Refrigerating* system. To be truly *Automatic*, as the term is understood and applied by The Automatic Refrigerating Co. of Hart-

Bowery Branch, Y. M. C. A.
New York City

Architects:
Jackson & Rosencrans, New York City

Automatic Refrigeration supplied to:

General Refrigerator
6′ x 2′6″ x 7′ (36°)

Ice Tank Capacity 200 lbs.

Lunch Room Refrigerator
6′ x 2′6″ x 7′ (38°)

ford, something more is needed than mere thermostatic control or the purely precautionary devices found on any other type of refrigerating machine.

The following hypothetical case illustrates the importance of genuinely *Automatic* control. Assume, if you will, that there is a break in the city water main or a temporary shut-off of the water supply for some other reason. With any mechanical refrigerating system, automatic, semi-automatic, or manually controlled, the interruption of the water supply renders the condenser inoperative and permits the pressure of the refrigerant to rise. Unless the plant is immediately stopped, an excessively high pressure will be generated. **Only the Automatic is regularly equipped with the Automatic High Pressure Safety Cut-off which shuts down the plant before such a pressure is approached and automatically places it in commission again when the emergency has passed.** The most that a manually operated or semi-automatic plant could do would be to automatically stop the compressor when the pressure became excessive. To start the plant again, human intelligence and attention would be required. In the meanwhile, the temperature in the boxes would necessarily rise and threaten to spoil the foodstuffs they contain. The *Automatic* itself protects against conditions of this sort.

Automatics Maintain Close Temperatures

Next in importance only to reliability and the safety and convenience of *Automatic* control is the economy of the *Automatic* plant, a feature closely identified with and largely dependent upon the control devices

National Cash Register Co., Dayton, O.

Automatic Refrigeration supplied to:

Vegetable Box
18′ x 12′ x 7′ (36°)

Kitchen Box
5′5″ x 5′5″ x 6′ (38°)

Meat Box
13′ x 12′ x 7′ (36°)

Butter, egg and milk box
6′ x 12′ x 7′ (36°)

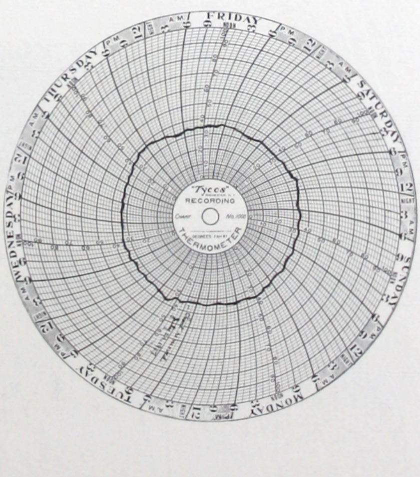
found only on *Automatics*. The temperature chart shown below illustrates the close limits of control in *Automatic* plants. It was taken from an institution where the refrigerating demand was heavy and the operating conditions such that the chill room was frequently opened to the outside atmosphere for comparatively long periods.

The chart which covers a full week, was put on at 6 P. M. Monday, the temperature in the chill room being about 35° F. The noteworthy feature is the extremely narrow range of temperature between 38° at 6 P. M. on Thursday as a maximum and 32° at 3 A. M. Friday morning as a minimum. By following the 34° line which marks the temperature desired in this particular cooler—and noting how many times the black line, or graph, touches a higher mark, a close estimate can be made of how many times and for how long the *Automatic* plant was operating and using electric current. The reader's attention is called to the fact that whenever the temperature was lowered below 34°, the thermostat automatically shut off the motor and stopped the plant, thereby saving power bills. No manually operated or non-automatic plant and much less any refrigerator using ice, can begin to equal the *Automatic* in maintaining a fixed temperature.

Automatics Need Little Attention—Can be Located Anywhere

Another prominent advantage of the electrically operated *Automatic* plant is that it is dependent neither upon steam nor constant attention. Therefore, it need not be placed in the engine room but can be located

Automatic Graphic Temperature Chart



anywhere in the particular building where refrigeration is desired. In many instances, we have installed *Automatic* plants on the roof. This obviously eliminates the additional cost and losses incident to long lines of unnecessary piping. The use of the *Automatic* instead of a steam driven plant has often saved a large portion of the installation cost.

The attention of the prospective customer is called to the fact that complete *Automatic* control can be provided with either direct expansion or brine circulation systems. There is an *Automatic* plant especially adapted for practically every refrigerating problem.

To sum up the important features of the *Automatic* system—the thermostat controls the starting and stopping of the motor that drives the ammonia compressor and it functions within 2° or less, saving electric power. The *Automatic* expansion valve keeps the ammonia pressure at the most economical point for whatever temperature is desired. The *Automatic* water regulator maintains the most economical rate of flow of water through the condenser. The *Automatic* high pressure safety cut-off automatically stops the motor if for any reason the pressure rises above normal, and hands the control of the motor back to the thermostat when the pressure becomes normal. The motor is protected and controlled through the *Automatic* motor control panel.

Simplicity of the Automatic Appeals

Instead of unreliable fuses, positive acting electric overloads are used, which protect the motor and save the expense and annoyance of re-

Fred Harvey, La Junta, Colo.

Architect: Mr. R. J. Raney, Kansas City, Mo.

Chief Engineer: Mr. F. N. Bisbee, Amarillo, Tex.

Architect for the building:
Mr. E. A. Harrison, Railway Exchange Building, Chicago, Ill.

Automatic Refrigeration supplied to:

Chef's Refrigerator 6′ x 10′ x 10′ (35-37°)
Dining Room Refrigerator 5′ x 11′ x 10′ (35-37°)
Display Refrigerator 20″ x 4′2″ x 5′ (40-45°)
Display Refrigerator 20″ x 7′ x 5′6″ (40-45°)
Baker's Box 3′ x 4′6″ x 7′ (40-45°)
Provision Box 3′ x 7′ x 7′ (40-45°)
Provision Box 20″ x 4′ x 7′ (40-45°)
Cut Meat Box 1′4″ x 3′ x 1′10″ (40-45°)
Cut Meat Box 1′4″ x 4′9″ x 1′10″ (40-45°)
Fish Box 1′4″ x 4′9″ x 1′10″ (32-34°)
General Box 5′3″ x 3′3″ x 10′9″ (35-37°)
Ice Cream Cabinet 1′6″ x 3′9″ x 2′6″ (24-26°)

newing fuses. At every turn, safety is made just as *Automatic* and certain as the satisfactory *Automatic* operation of the machine itself.

Until the *Automatic* refrigerating plant was placed on the market, it was practically impossible to insure the maintenance of uniform temperatures, except in plants large enough to warrant the employment of a trained refrigerating engineering staff for both night and day service. *Automatic* equipment does accomplish this as evidenced by the satisfactory operation of thousands of *Automatic Refrigerating* plants through the country.

Automatic Service Everywhere

Every *Automatic* refrigerating plant is designed to give maximum economy and efficiency. The interest of both the owner of the plant and the Automatic Refrigerating Company demands not only efficiency from the plant as it is installed, but requires that this efficiency be maintained. To that end, The Automatic Refrigerating Company operates branch offices and service stations in all parts of the country. Stock parts are always kept on hand for repairs and an organization of men experienced in automatic refrigerating engineering is maintained.

In selling *Automatic Refrigeration*, Service, rather than an assembly of equipment, is the commodity offered. In effect, the purchaser of an *Automatic* plant buys the guarantee of the manufacturer that a certain service will be rendered rather than a piece of mechanism whose value depends upon the personal ability of some individual to run it. The

Maison-Marcell Cafe, Los Angeles, Cal.

Architect: Mr. Frank Meline

Mr. J. Marcell Annechini wrote, "The plant you installed in my cafe has proved satisfactory for all of the following purposes: fish storage; cold meat storage; pastry, butter, milk and cream boxes and I find it especially efficient for cooling the drinking water system".

development of mechanical refrigeration by The Automatic Refrigerating Company has today reached the point where it is safe to say that any refrigerating problem can be simplified by the installation of the Automatic Refrigerating Plant.

Automatic Data Sheet in the Back of Book

As each projected installation is a separate engineering problem, it is necessary, in order to accurately calculate refrigeration requirements, and to make an intelligent recommendation, that the data, called for on the blank given at the back of this booklet, be supplied. A rough sketch of the rooms or boxes to be cooled should also be made, showing their relative arrangement and any special conditions which exist, or are desired, should be fully described.

In laying out a restaurant or hotel kitchen the recommendation which meets with the most favor among architects and engineers is to place the main storage box in the basement away from the extreme heat with the consequent lower cost of operation of the refrigerating plant. Smaller boxes can be installed close by the cutting tables in the kitchen and may be fed daily from the main box. A suggested plan for refrigeration in a restaurant or hotel is shown on Page 34 of this booklet.

The reader's attention is called to the other typical layouts on pages 32 to 36 of this booklet.

These plans show how a single *Automatic* plant can be so designed as to take care of a wide variety of refrigerated places, economically and effectively.

O'Henry Hotel, Greensboro, N. C.

Architect: Mr. W. L. Stoddart, New York City

Automatic Refrigeration supplied to:

Basement Refrigerator 20' x 7' x 9' (35°)
Bakery Box 2'6" x 7' x 7' (40°)
Bakery Box 3' x 6' x 7' (40°)
Oyster Pantry 2'6" x 5' x 7' (38°)
Serving Pantry Box 3' x 7'6" x 7' (40°)
Butcher Box 16' x 6' x 9' (36°)
Butcher Box 9' x 3' x 7' (40°)
Mezzanine Floor Refrigerator 3' x 5' x 6' (40°)
Second Floor Pantry Box 3'6" x 2'6" x 6' (40°)
200 lb. *Ice Making Tank*
Drinking Water System (1000 gallons)

15 W 34th St.

SCHRAFFT'S

ARCHITECT
CHARLES E. BIRGE
NEW YORK

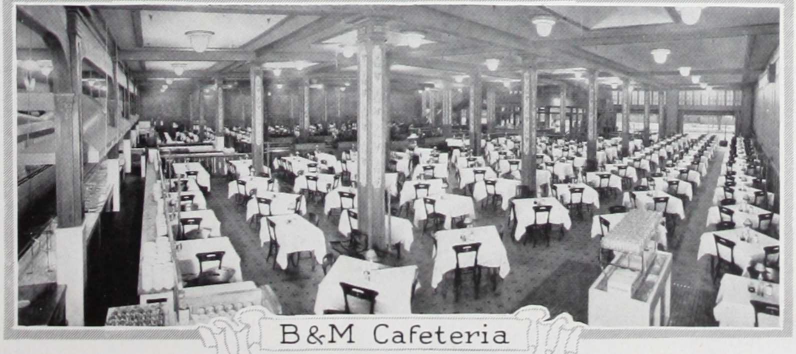
181 B'way

15 W 34th St.

ARCHITECT
HENRY IVES COBB
NEW YORK

TAUPIER'S

23-29 WILLIAM STREET
NEW YORK



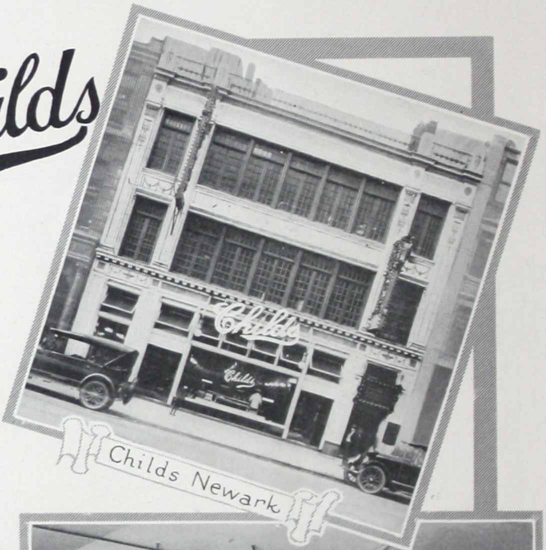
B&M Cafeteria

ARCHITECT - ARTHUR S. HEINEMAN LOS ANGELES CAL.

Many Childs Restaurants are equipped with Automatics Four of them are illustrated here

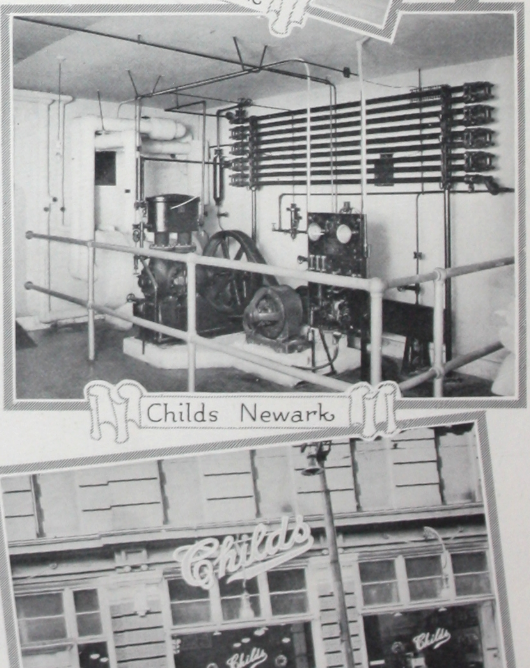
Childs

Childs Washington



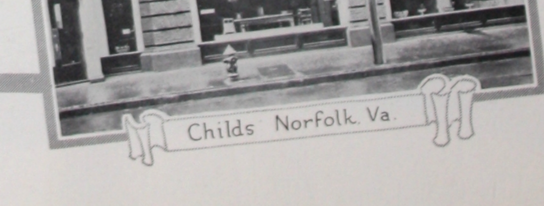
Childs Newark

Childs Washington



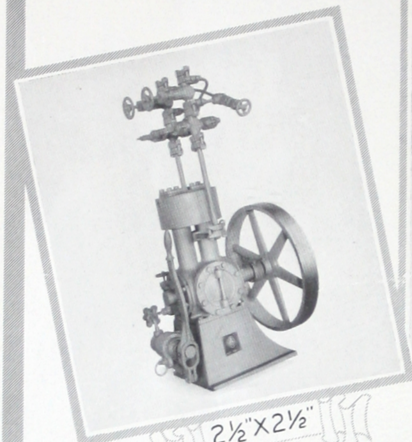
Childs Newark

Childs 34th St., N.Y.C.

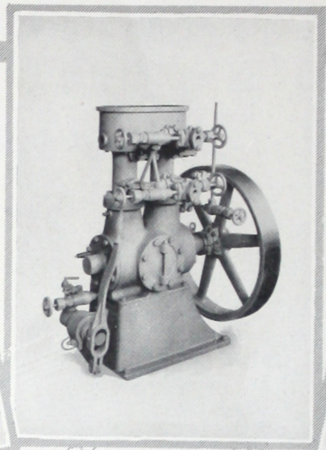


Childs Norfolk, Va.

Not one but many Automatics for the same Organization



2½"X2½"



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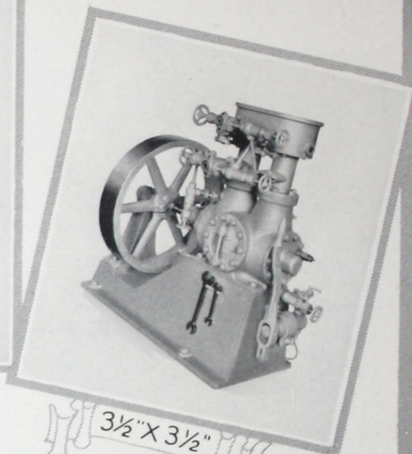

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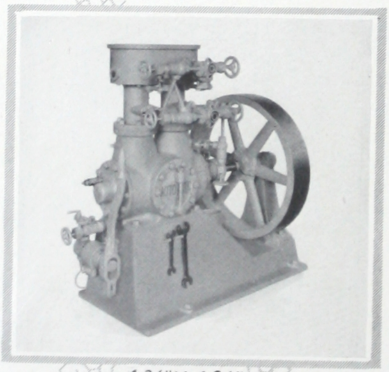
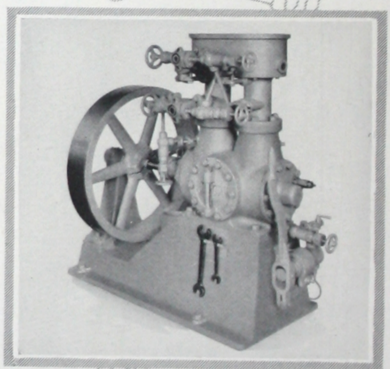
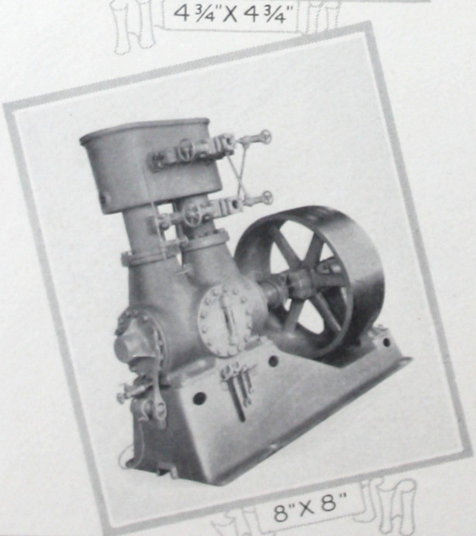


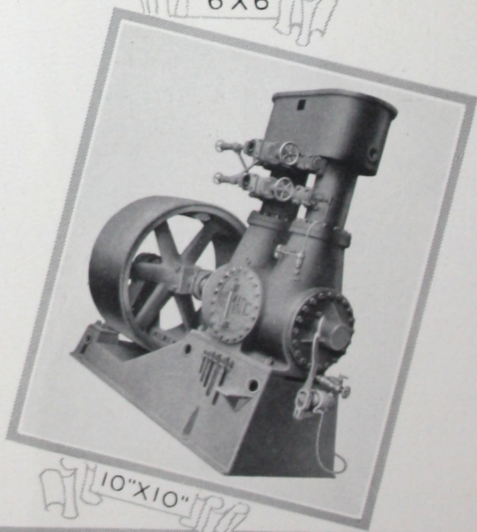
4¾"X4¾"



6"X6



8"X8"



10"X10"

The Mechanics *of* Automatic Refrigeration

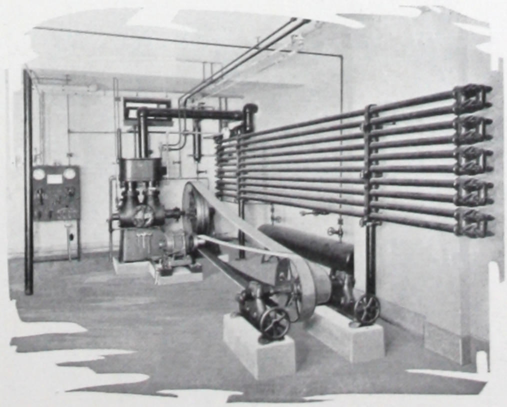
While the accomplishment and advantages of mechanical refrigeration are very generally understood, the following brief description of its functions, and process of work, may be of interest and value to prospective users of *Automatic* refrigeration.

Throughout the history of mechanical refrigeration, and particularly during the last thirty years, all the experience of both manufacturers and users has clearly indicated that the compression system, using anhydrous ammonia as the cooling fluid, is by far the most satisfactory, and, when properly controlled and operated, particularly as in the *Automatic* system, the most economical and safest method.

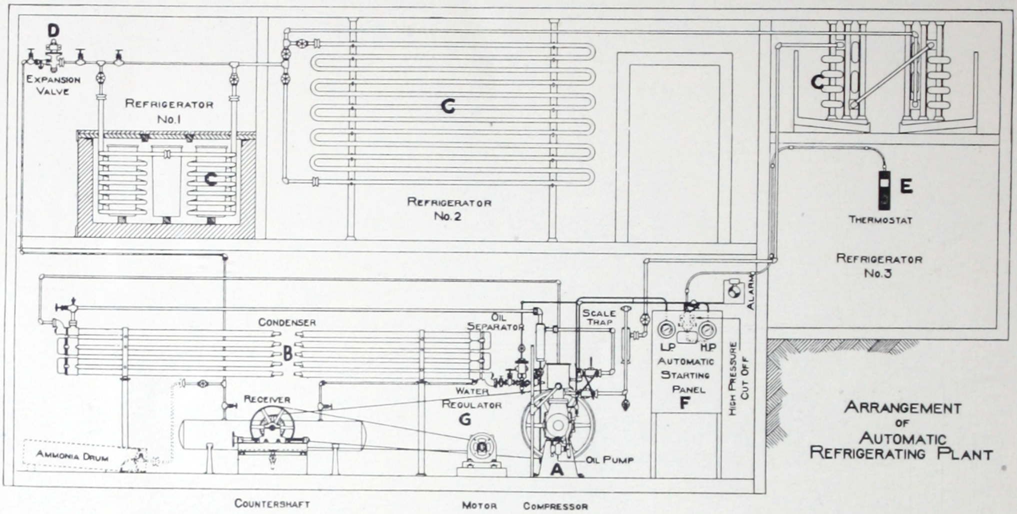
Automatic Plants Use Compression System

The compression system of refrigeration, as used in *Automatic* plants, depends upon two facts: First, that certain gases, and particularly ammonia, when confined in a tight vessel and surrounded by running water, can, by the application of mechanical pressure, be reduced to a liquefied form. Second, that if the liquefied gas is allowed to expand gradually into another vessel, it will take up heat from the atmosphere surrounding the second vessel.

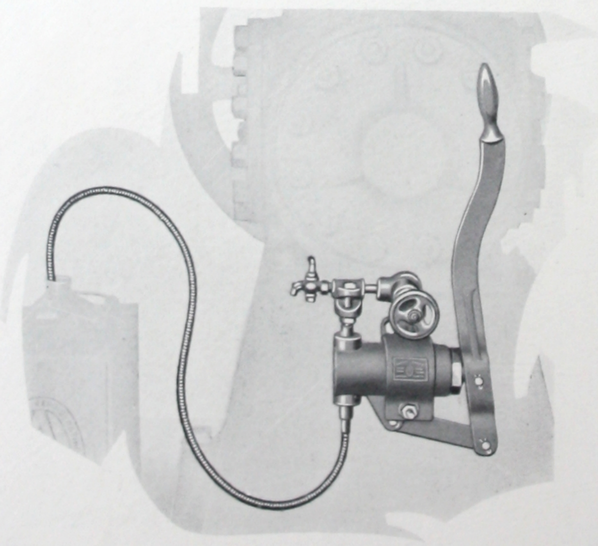
To apply these principles to refrigeration requires a machine that will compress, liquefy and store the ammonia gas until it is needed; that



A Typical Automatic Refrigerating Plant



ARRANGEMENT OF AUTOMATIC REFRIGERATING PLANT



The New Automatic Oil Pump

This is the latest Automatic feature. It makes oiling easy. Now supplied as standard equipment.

will allow the liquefied gas to expand gradually into coils of piping placed in the room, show case or other space it is desired to cool; that will draw off the gas after it has taken up as much heat as it will from the air surrounding the piping; and which will again compress and liquefy the ammonia for further service.

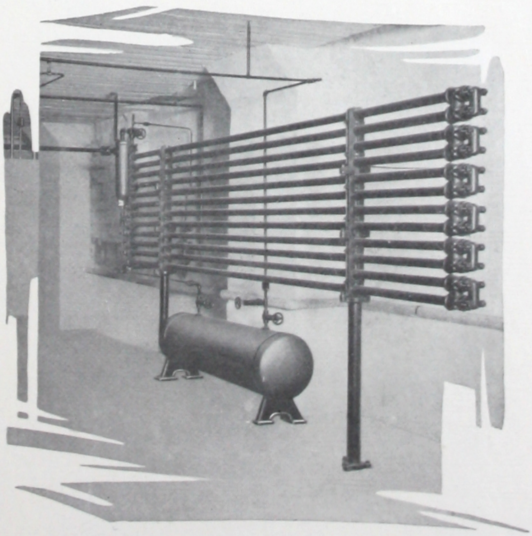
In its simplest, most efficient form such a refrigerating plant—the *Automatic*—consists of three essential parts, the Compressor, the Condenser and the Expansion Coils.

Three Main Parts in Refrigerating System

Referring to the accompanying drawing of an *Automatic* Refrigerating Plant, it will be seen that the Compressor (A) is really a pumping machine designed to compress the ammonia gas and force it through the pipes of the Condenser (B), under a pressure of from 150 to 185 lbs. per square inch. The size of the Compressor is determined by the space to be cooled, since its capacity is based upon the weight of ammonia gas it can discharge in 24 hours, each pound of ammonia representing a known quantity of heat absorbing power.

The Condenser (B) is a series of pipes around or over which a constant supply of cool water is allowed to flow. The heat absorbed by the ammonia while in the Expansion Coils (C) located in the various rooms, show cases, etc., is absorbed by the cold water, and the combined effect of the cooling water and the pressure exerted by the Compressor reduces the gas to liquid form again, ready for use in another cycle of refrigeration through the Expansion Coils to the Compressor and back to the Condenser again, and so on indefinitely.

Automatic Condenser and Receiver

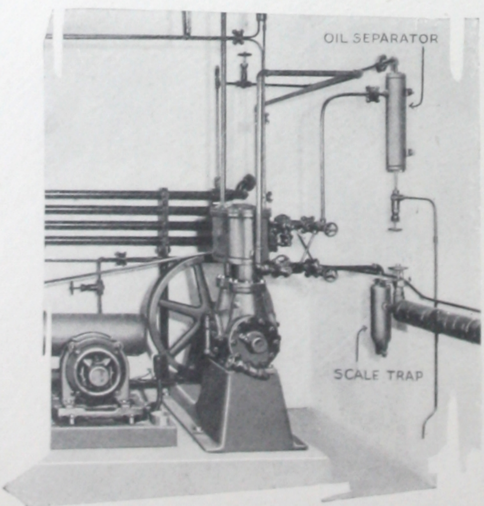


The Expansion Coils (C) are placed on the walls or sides of the room or box to be cooled and the liquefied ammonia gas from the Condenser is fed into these coils by a sensitive valve (D) (Expansion valve on diagram) under a pressure varying from 5 to 25 lbs. per square inch, according to the refrigeration desired. The re-expansion of the gas in the coils absorbs heat from the surrounding air, producing intense cold. After performing this refrigerating work, the gas is drawn into the cylinder of the Compressor, to which the Expansion Coils are connected, sent through the Condenser, and pumped or driven on its round of operation, the same gas being used continuously.

Automatic Electrically Driven

Electric motors are universally acknowledged to be the most practical and satisfactory method of supplying power in small units for driving machinery. This is especially true where a sensitive, prompt and certain control of a piece of machinery is essential to its success and is the reason why all *Automatic* plants are electrically driven and controlled.

Oil and scale traps protect *Automatic* plants against foreign substances which may be introduced or accumulate in the system in the course of time. The design and construction of the *Automatic* Compressor is such that only a very minute quantity of oil can creep past the piston rings and into the system, but to guard against the possibility of trouble from this source, an adequate oil trap is provided. The scale trap, in like manner, provides for the collection and removal of all particles of grit,



Automatic Oil Separator and Scale Trap

organic matter, etc., which may be introduced into the refrigerating system.

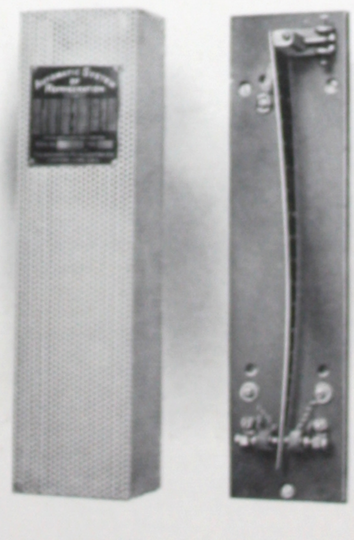
Thermostat Controls Temperatures Within 2°

The Thermostat (See E, Page 22) located in one of the refrigerators, controls the stopping and starting of the electric motor which drives the Compressor. It functions within 2° or less, and is simple, dependable, and always on the job. It keeps close watch over temperatures and saves electric power.

The Thermostat, which has two adjustable electric contacts, is set for two temperatures: one, above which the temperature in the refrigerator must not be allowed to rise, and the other, below which it must not fall.

After the plant has been started, the Thermostat will not operate until the lower or cold limit of temperature has been reached in the refrigerating box. Electric contact is then made by the Thermostat releasing the switch on the Panel Board (See F), and stopping the motor. With the motor stopped and no fresh ammonia being sent into the Expansion Coils, the temperature in the refrigerating box gradually rises to the higher limit, when the opposite electric contact is made, starting the motor again and producing refrigeration.

This system of *Automatic* Control, as designed for *Automatic* plants, keeps both motor and compressor working at their maximum efficiency, and when they are stopped all expense of operation ceases. That is, where *Automatic* equipment is used, the best of refrigeration is insured, while the cost is kept at the lowest possible figure since the amount of



Automatic Thermostat

work done depends on the actual refrigeration required in the cooler or chill box to keep its contents at the desired temperature.

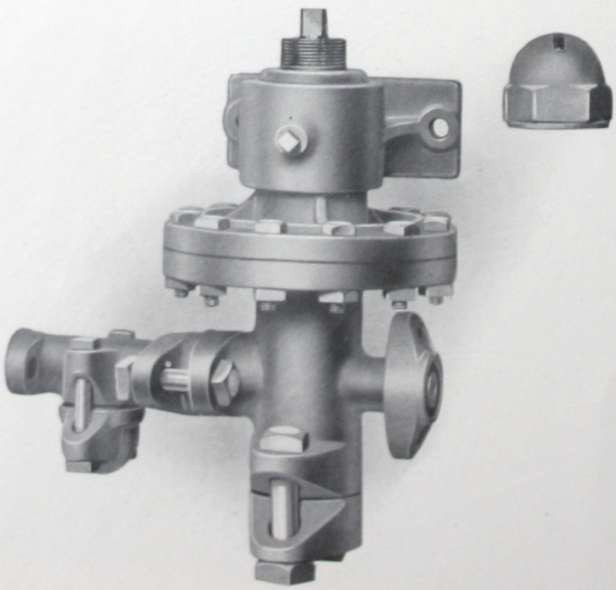
Probably the most important single factor in securing perfect refrigeration is the proper control of the amount of liquid ammonia fed into the Expansion or Cooling Coils through the Expansion Valve.

The Expansion Valve must be so designed that it will at all times permit enough liquid ammonia to enter the Coils to insure its being vaporized throughout their length, and at the same time must prevent too much ammonia being used. If too much ammonia is permitted to enter, the liquid vaporizes in the pipes leading back to the Compressor, which is a needless waste. If too little ammonia is fed, the Coils are not doing all the work they should, and a super-heated gas is returned to the Compressor.

Ammonia Feed Automatically Regulated

In *Automatic* plants proper regulation of the ammonia feed is insured at all times by the design of the *Automatic* Expansion Valve.

Within the valve chamber is fitted a very carefully and accurately constructed valve mechanism which will allow a feed of ammonia from the compression side of the system into the expansion side only when the pressure against a flexible diaphragm in the valve chamber is less on the expansion side, that is, in the Expansion Coils, than the pressure of an adjustable spring on the opposite side of the same diaphragm. The proper amount of liquid ammonia necessary to be fed to meet the requirements for perfect refrigeration in each individual *Automatic*



Automatic Expansion Valve

installation can be determined and regulated by adjusting this spring.

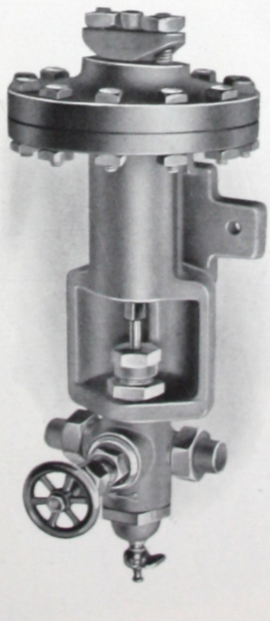
In every mechanical refrigerating system, to secure satisfactory results, cooling water must flow through the Condenser and the water jacket of the Compressor, so that the heat generated by the compression or absorbed from the refrigeration and released by the liquefaction of the ammonia gas as it comes back from the Expansion Coils, may be dissipated.

Automatic Water Regulator Insures Economy

In the *Automatic* Water Regulator (See G) this is accomplished by allowing the ammonia pressure in the Condenser pipes to act against a flexible diaphragm, which in turn actuates a valve stem or plunger in the chamber of the Regulator; the reverse action being that of a spring adjusted to prevent a flow of water when the pressure in the Condenser is reduced below normal, that is, when the Compressor is not running. In other words, the flow of water does not depend upon the adjustment of some part of the apparatus other than the Condenser, but is directly governed by the Condenser pressure, the flow of water increasing in proportion to the amount of refrigeration being done at any particular time and stopping entirely when the Compressor is shut down.

Under all conditions, the *Automatic* Water Regulator maintains the most economical rate of water flow, which directly affects the economy of the plant, since too little water means higher operating pressure and increased power bills, while too much water results in waste and large water bills.

Automatic Water Regulator



A special feature of *Automatic* plants is the absolute safety afforded by means of the *Automatic* High-Pressure Cut-off (See Page 22).

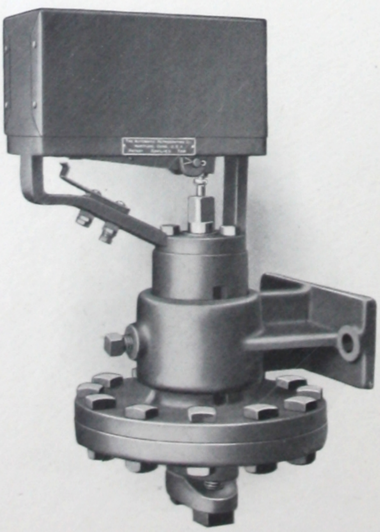
It sometimes happens, because of cold weather, fire, repairs to a city water main, etc., that there is a failure of the supply of water entering the Condenser. If the machine continued to run under such conditions a dangerously high pressure would develop, but in the *Automatic* system it is impossible for this to occur, because long before the pressure became anywhere near dangerous, the machine would be automatically stopped by the High-Pressure Safety Cut-off. At the same time that the machine is stopped a warning bell is sounded, calling attention to the fact that something is wrong. As soon as the pressure returns to normal the machine is again started automatically. The warning signal may be located at any convenient point or at any distance from the plant.

High-Pressure Safety Cut-off Insures Protection

The *Automatic* High-Pressure Safety Cut-off is connected with the compression or discharge side of the system, and consists of electric contacts so adjusted that if the pressure, as indicated by the gage, should from any cause whatsoever rise above its normal range, an electric contact is broken, which releases the relays on the switchboard and stops the motor.

When the pressure falls to a pre-determined level an electric contact is made by the mechanism within the High-Pressure Cut-off restoring the control of the plant to the Thermostat which, in turn, is again controlled by the temperature conditions in the refrigerator.

This return of the control of the plant to the Thermostat by the *Automatic* High-Pressure Safety Cut-off when the pressure has fallen to



Automatic High Pressure Cut-off

normal, avoids any permanent shut-down of the plant. This also applies in case of temporary failure of the water supply during the night, or at any other time where the stopping of the refrigerating process might not be known for several hours and loss of foodstuffs be caused by the temperature of the refrigerator rising above the usual cold-storage point. (An exclusive *Automatic* feature.)

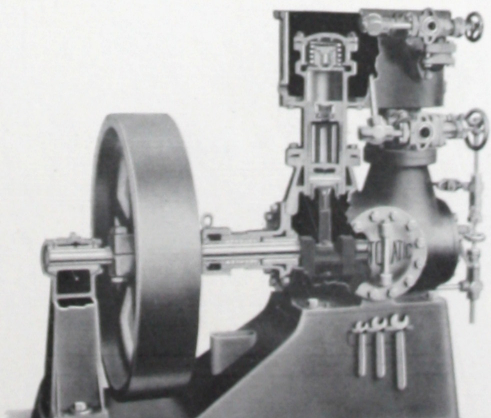
Another feature of the *Automatic* High-Pressure Safety Cut-off is that it operates by breaking—not making—a circuit. Electric contacts which are but seldom used have a bad habit of failing in an emergency, because the contact points are dirty, corroded, or insulated by an oil film. For that reason a contact breaking device is used on *Automatic* plants—it's certain to operate when needed and always safe.

All Parts of Automatic Compressors Standardized

The *Automatic* Compressor, as installed in *Automatic* plants, is the result of thirty years of development and experience in the construction and operation of *Automatic* Refrigerating Plants.

The rugged construction of *Automatic* Ammonia Compressors makes them absolutely reliable and practically everlasting, since every wearing part is removable, standardized, and therefore replaceable at relatively small cost. Even the cylinders in a *Automatic* Compressor are separate castings and made from a special grade of metal particularly suited to that class of work.

Four removable main bearings give complete support to the crankshaft. Discharge valves are enclosed in safety cylinder heads and balanced suction valves in the tops of the pistons permit close cylinder clearances with high efficiency and perfect safety. Both discharge and suction valves, with cages, may be removed by simply taking off the cylinder heads.



Sectional View of Automatic Compressor

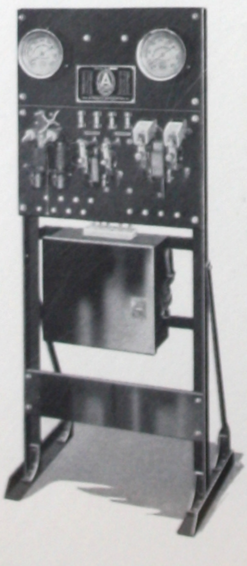
The long, screwed gland, metallic packed stuffing box insures freedom from ammonia waste and assures a cool bearing at all times. The splash lubrication is simple and thorough.

Electric Overloads Protect Motor

The thermostatic control of the starting and stopping of the Compressor in *Automatic* plants is taken care of by the exceptionally well-designed switchboard or Starting Panel. Under the *Automatic* system, the operation of the Thermostat in the refrigerator completes or closes switchboard relay circuits, which in turn throw circuit breakers on the switchboard. These circuit breakers have ample wiping contact surfaces which wholly eliminate all trouble from arcing, either in the switchboard or, where it would be more likely to cause trouble, at the contact points on the Thermostat itself. The *Automatic* Control Panel not only controls but protects the motor. Instead of unreliable fuses, positive acting electric overloads are used, which absolutely protect the motor from crossed wires or any electrical damage. At every turn Safety is made just as automatic and certain as the satisfactory operation of the machine itself.

Automatic Service Satisfies

Mechanically speaking, the *Automatic* system of refrigeration is as near perfection as is humanly possible. No element, either in design or materials of construction, that would make for greater safety, increased efficiency, convenience or economy in operation, has been omitted. Men who have made a life-long study of mechanical refrigeration are responsible for its design and construction. In buying *Automatic* refrigeration, however, the owner buys more than mere equipment—he buys service. In effect he buys a known degree of refrigeration for a known space and the guarantee of the manufacturers that the plant, as installed by them, will at all times do everything that its makers claim for it.

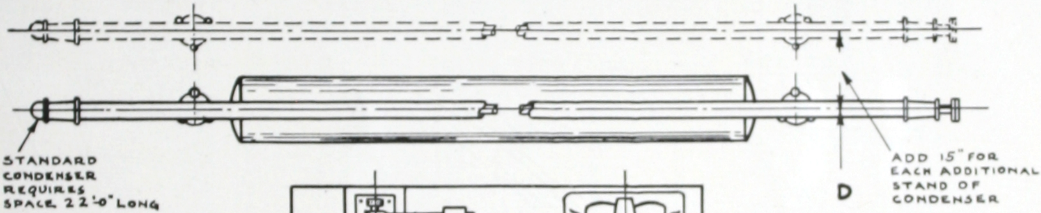


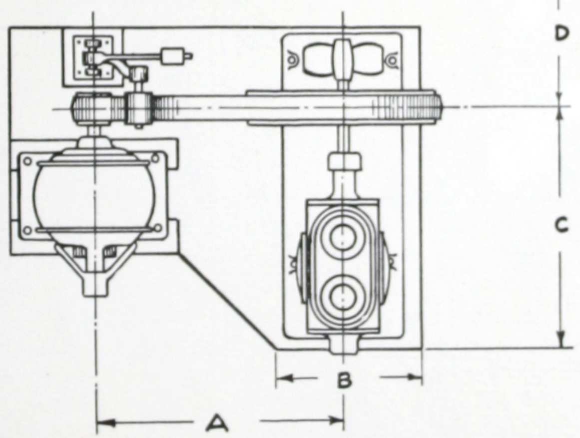
Automatic Switchboard

DIMENSIONS OF PIPING CONNECTIONS AND FLYWHEEL

Size Compressor	Flywheel	Water Conn.	Sewer Conn.	Compressor Wt. per sq. ft.
2½"x2½"	24"x3"	½"	½"	312
3"x3"	28"x4"	½"	¾"	374
3½"x3½"	30"x5"	½"	1"	186
4¾"x4¾"	38"x7"	¾"	1¼"	280
6"x6"	38"x10"	¾"	1½"	307
8"x8"	48"x19"	1"	2"	325
10"x10"	60"x29"	1"	2½"	518

FOUNDATION DIMENSIONS (Short Drive)





Size Mach.	Capacity in Tons Refrigeration	A† Max.	A† Min.	B	C	D	E*
† 2½"×2½"	¾	4'-0"	3'-0"	18"	22⅛"	6"	3'-8"
† 3"×3"	1	5'-0"	3'-0"	2'-0"	2'-3¾"	12"	4'-6"
3½"×3½"	1½	5'-0"	3'-0"	2'-0"	3'-0¼"	2'-0"	4'-9"
4¾"×4¾"	4	6'-0"	4'-0"	2'-6"	3'-10½"	2'-6"	6'-0"
6"×6"	8	6'-0"	4'-0"	3'-0"	4'-10¼"	3'-0"	7'-6"
8"×8"	16	7'-0"	5'-0"	3'-9"	6'-0¼"	3'-9"	9'-0"
10"×10"	32	8'-0"	6'-0"	4'-2"	7'-4¼"	5'-6"	11'-6"

*Headroom required to remove pistons
†For Standard Drive without Short Drive
A = 8'-0"

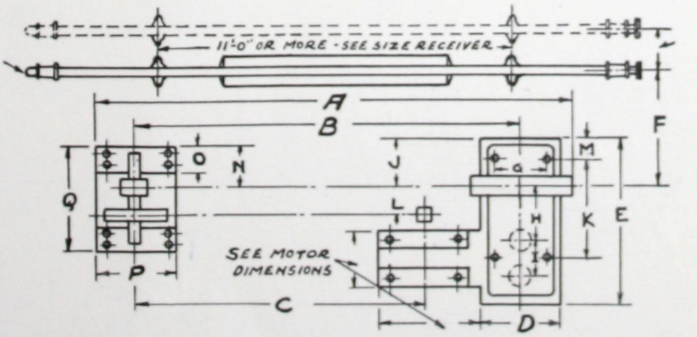
Special Condenser of any length can be furnished when desired.

DIMENSIONS OF COMPRESSOR FOUNDATIONS (Standard Drive)

Standard Condenser requires space 22'-0" long.

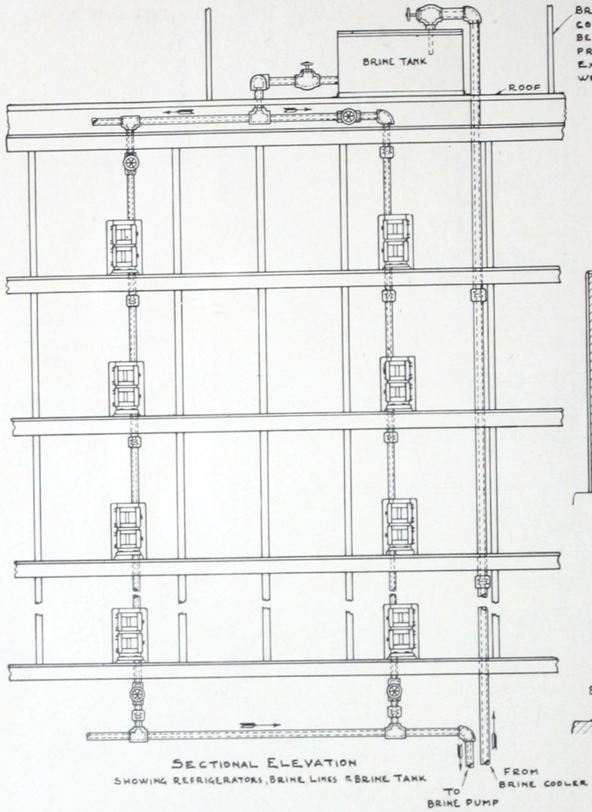
Special Condenser of any length can be furnished when desired.

NOTE:—
"R" is amount of headroom required to remove pistons.

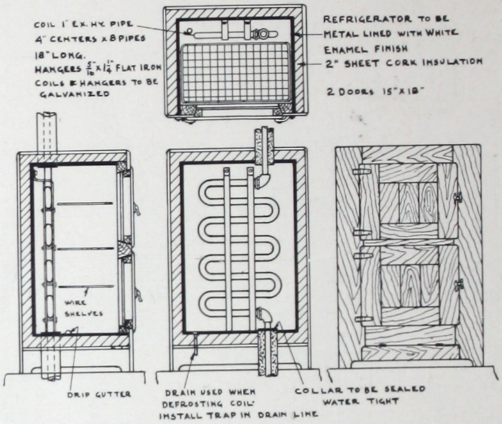


Add 15" for each additional stand of condenser.

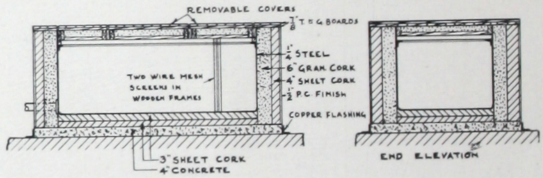
Size Comp.	Capacity in Tons Refrigeration	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
3"×3"	1	12'-8"	10'-0"	7'-6"	20"	3'-8"	12"	13½"	13¼"	7½"	16½"	20"	8"	20¾"	16½"	11"	2'-6"	3'-4½"	4'-6"
3½"×3½"	1½	12'-3"	10'-0"	7'-6"	2'-0"	4'-0"	2'-0"	18½"	20"	8½"	11¾"	2'-6¼"	8"	5¾"	16½"	11"	2'-6"	3'-4½"	4'-9"
4¾"×4¾"	4	14'-10"	12'-0"	9'-0"	2'-6"	5'-2"	2'-6"	20¾"	2'-1¾"	11½"	15½"	3'-3¼"	8½"	8¼"	16"	11"	2'-6"	3'-3½"	6'-0"
6"×6"	8	15'-1"	12'-0"	9'-0"	3'-0"	6'-6"	2'-6"	2'-3½"	2'-6¾"	15"	19¾"	4'-1¼"	12"	8¾"	19"	13"	3'-0"	4'-4"	7'-6"
8"×8"	16	18'-6"	15'-0"	11'-0"	3'-9"	8'-2"	3'-9"	2'-11"	3'-4"	18½"	2'-1¾"	5'-5¼"	19"	9¼"	2'-3"	13"	3'-0"	5'-8"	9'-0"
10"×10"	32	24'-3"	20'-0"	15'-0"	4'-2"	10'-0"	5'-6"	3'-4"	4'-2¼"	22"	2'-7¾"	6'-10¾"	2'-4"	10¼"	2'-9½"	15"	3'-6"	7'-5"	11'-6"



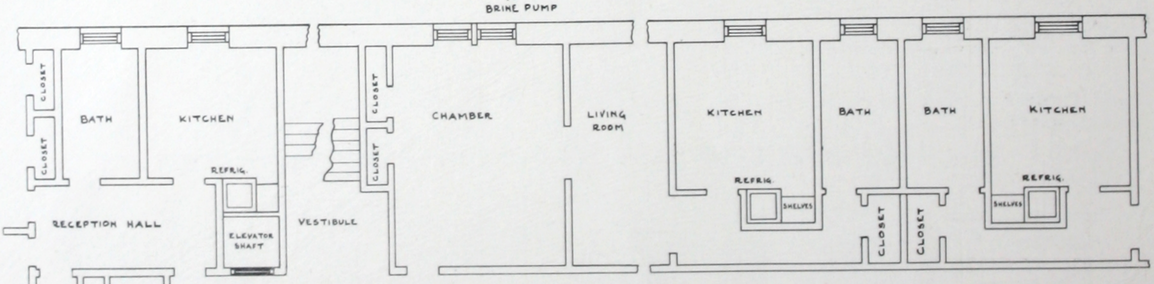
SECTIONAL ELEVATION
SHOWING REFRIGERATORS, BRINE LINES & BRINE TANK



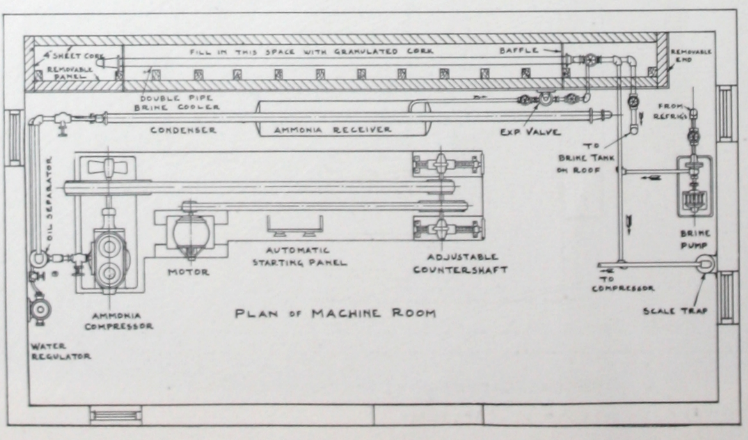
DETAILS OF APARTMENT HOUSE REFRIGERATOR



DETAILS OF BRINE TANK

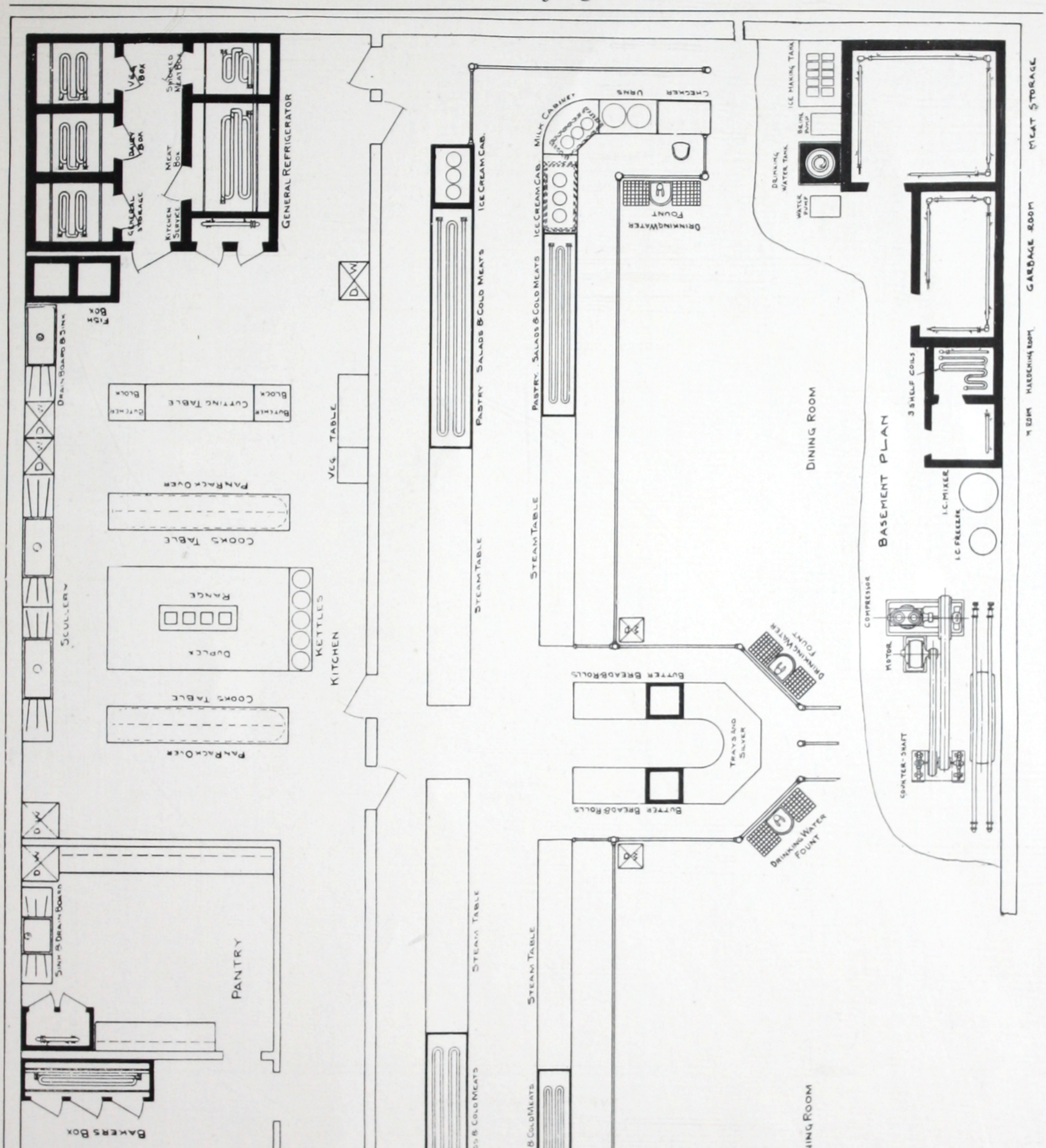


TYPICAL FLOOR PLAN

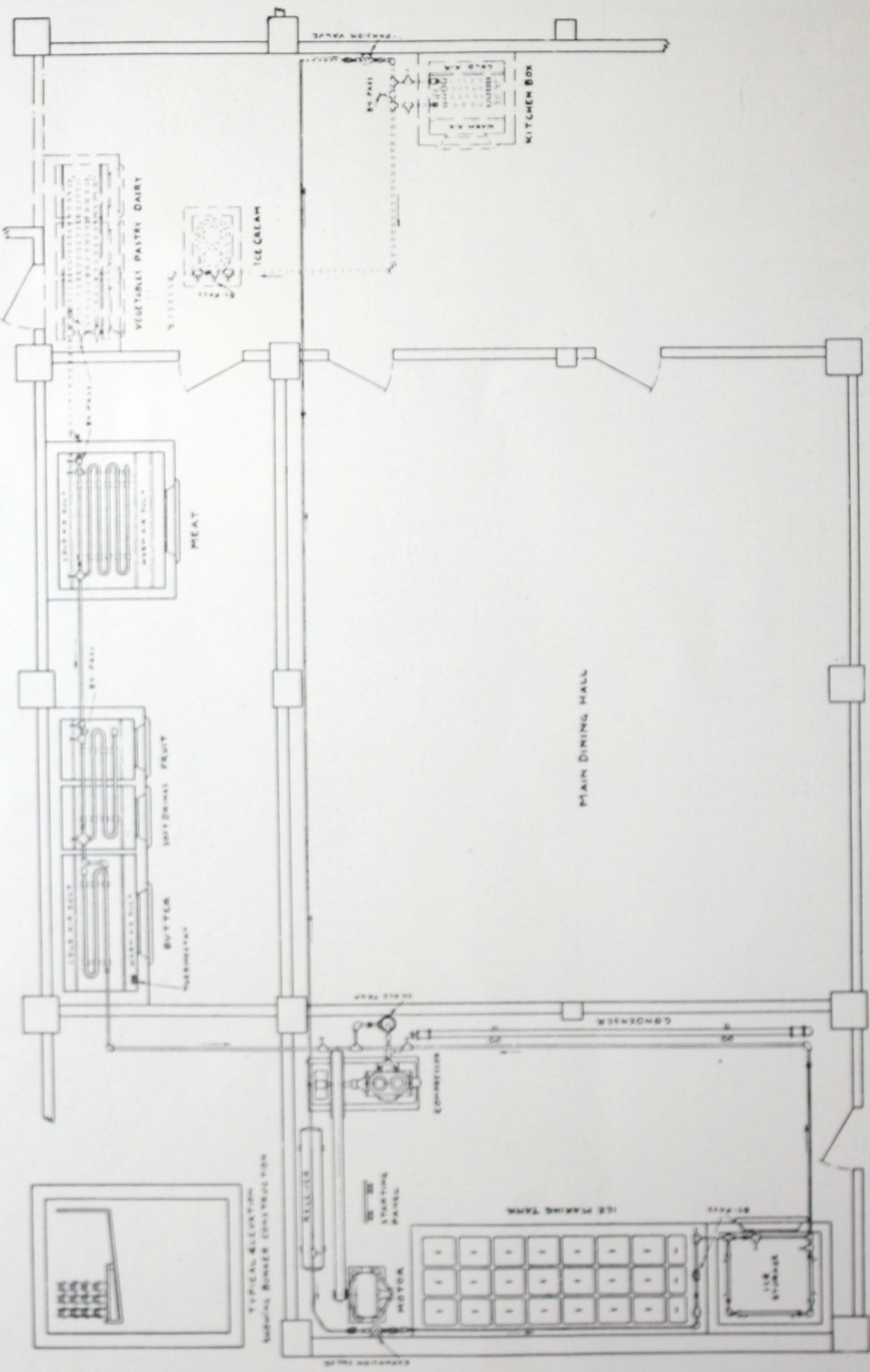


PLAN OF MACHINE ROOM

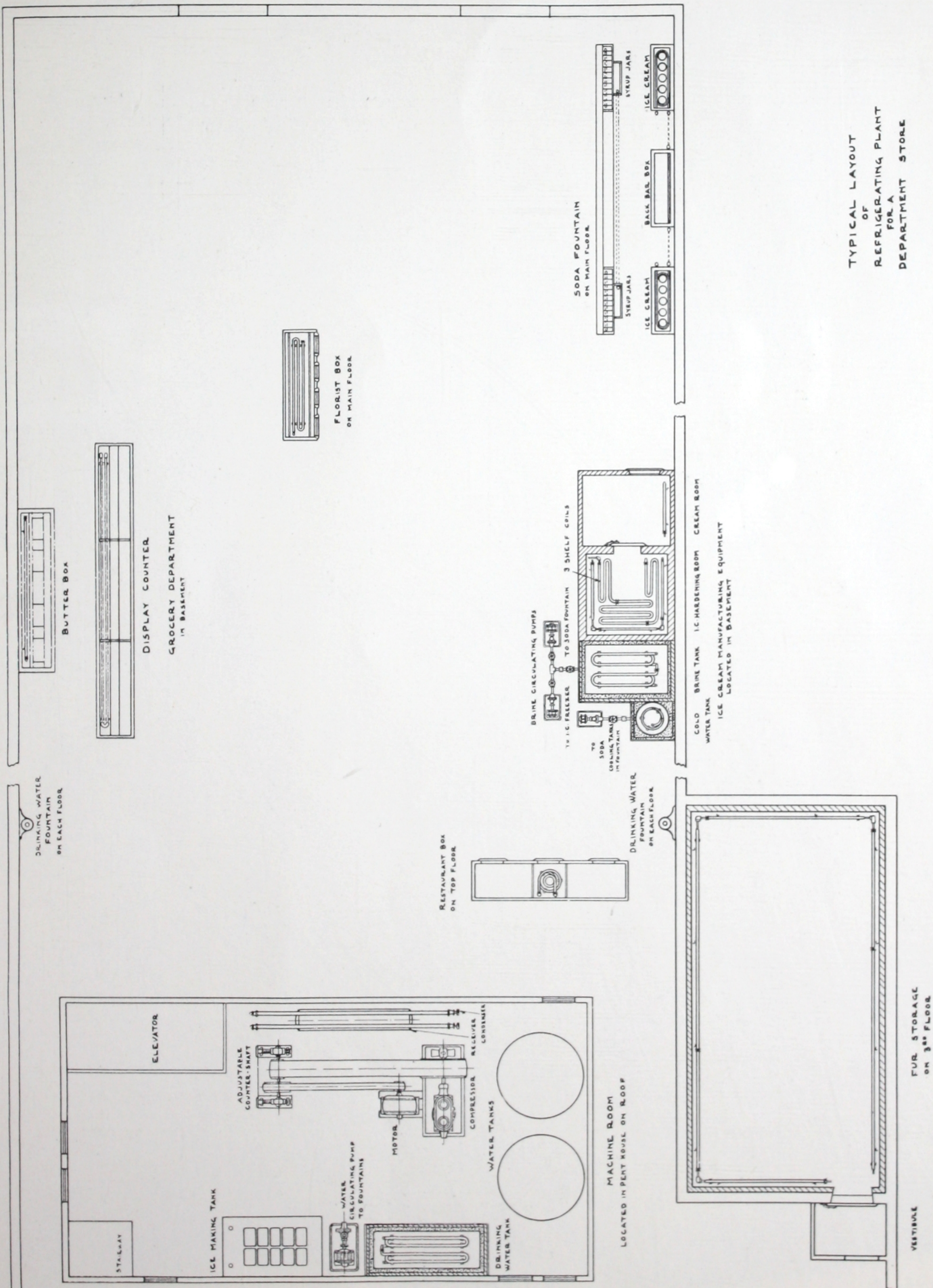
TYPICAL LAYOUT
OF
REFRIGERATING EQUIPMENT
FOR A
MODERN APARTMENT HOUSE
SCALE :- $\frac{1}{4}$" & $\frac{1}{2}$" = 1 FOOT



TYPICAL LAYOUT OF AN INDUSTRIAL CAFETERIA



TYPICAL LAYOUT
FOR
HOTEL INSTALLATION


TYPICAL LAYOUT OF REFRIGERATING PLANT FOR A DEPARTMENT STORE
SODA FOUNTAIN ON MAIN FLOOR
ICE CREAM
SYRUP JARS
BACK BAR BOX
ICE CREAM
SYRUP JARS
FLORIST BOX ON MAIN FLOOR
BUTTER BOX
DISPLAY COUNTER
GROCERY DEPARTMENT IN BASEMENT
DRINKING WATER FOUNTAIN ON EACH FLOOR
BRINE CIRCULATING PUMPS
TO I.C. FREEZER
TO SODA FOUNTAIN
3 SHELF COILS
TO SODA COOLING TANKS IN FOUNTAIN
COLD WATER TANK
BRINE TANK
I.C. HARDENING ROOM
CREAM ROOM
ICE CREAM MANUFACTURING EQUIPMENT LOCATED IN BASEMENT
DRINKING WATER FOUNTAIN ON EACH FLOOR
RESTAURANT BOX ON TOP FLOOR
FUR STORAGE ON 3RD FLOOR
VESTIBULE
ELEVATOR
ADJUSTABLE COUNTER-SHAFT
RECEIVER
CONDENSER
COMPRESSOR
MOTOR
WATER TANKS
MACHINE ROOM LOCATED IN PENT HOUSE ON ROOF
WATER CIRCULATING PUMP TO FOUNTAINS
ICE MAKING TANK
STAIRWAY
DRINKING WATER TANK

DATA SHEET

	Room I	Room II	Room III	Room IV
Length of room				
Width of room				
Height of room				
Used for				
Lbs. cooled daily				
From Temp. of				
Outside Temp.				
Desired Temp.				
Thickness of walls				
Wall construction				
Is door often opened?				
Is any part exposed to direct rays of sun?				

Kind of Electrical Current ____ A. C. or D. C. ____ Phase ____

Voltage ____ Frequency ____

Source of Water Supply ____

Summer Temp. of Same ____

Max. Amt. of Ice now used ____

Special Data (Number of feet of refrigerated show case, etc.) ____

Signed ____

Address ____

Return to THE AUTOMATIC REFRIGERATING COMPANY

(Incorporated)

HARTFORD, CONN.

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THE AUTOMATIC REFRIGERATING CO.
AUTOMATIC
REFRIGERATION
HARTFORD CONN.